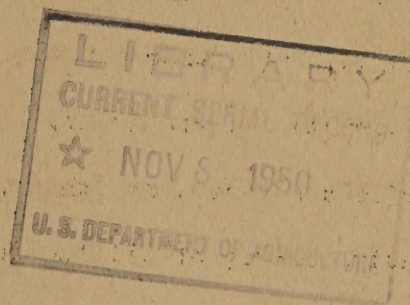


1.933

R8827

RURAL ELECTRIFICATION JOB TRAINING AND  
SAFETY CONFERENCE REPORT

October 17-21, 1949



JEFFERSON MEMORIAL AUDITORIUM  
U. S. Department of Agriculture, South Building  
Washington, D. C.

Compiled by  
Management Division  
Rural Electrification Administration  
U. S. Department of Agriculture



## PREFACE

In preparing this summary of the seventh annual Job Training Instructors Conference, it has been the committee's aim to make it brief and simple enough for the new man, yet complete enough so that it will be of value to those with experience in the training field. It is intended to be, not a report that recites all the valuable information and material developed, but rather one that will promote thinking and encourage the instructor to use it as reference material.

The subjects selected and the training afforded were the result of a comprehensive survey of all the instructors in the various states. With the assistance of the planning committee, and the advisors to the committee representing R.E.A. and the U. S. Office of Education, the program was developed. Any success which may have resulted from this seventh annual conference certainly belongs to those taking part in the program. Especially do we want to pay our respects to W. A. Ross, U. S. Office of Education; Lawrence Borosage and George Brandon, Ohio State Department of Education, for their able assistance in conducting training sessions at this conference. We also wish to express our sincere appreciation for the assistance and fine cooperation of the two co-sponsoring agencies, the U. S. Office of Education and the Rural Electrification Administration.

I wish to express my sincere thanks to the entire planning committee for their suggestions, cooperation and assistance in this conference. Also to Florence Clucas, Eleanor Bee, and Elizabeth Swedine White for taking notes which made this report possible.

Chester A. High, Chairman

1949 Planning Committee



Address by Claude R. Wickard, Administrator

Rural Electrification Administration

October 17, 1949

I am happy to be with you today at the beginning of a conference which I am sure will be of great benefit to all of us. The importance of a meeting such as this cannot be overstressed. During the next five days you will take part in many forums and discussions that will better prepare you to carry on in your important role of job training and safety instructors for REA borrowers throughout the Nation.

I can think of no other field where job training and safety should be stressed more.

Electricity is a great boon to mankind. But, conversely, it is also a dangerous killer if not handled properly.

The proper training of employees to understand their jobs and perform them well is essential to the successful operation of any enterprise. This is especially true of businesses which supply such an essential service as electricity for farmers and especially true of businesses subjected so much to public scrutiny as electrification borrowers.

The cost of accidents has been of primary concern to our borrowers since the first rural lines were built. Conversely, the positive advantages of not having accidents have also been fully understood. It was soon recognized that some type of training and safety program would have to be set up for the benefit of electrical co-op workers. This recognition was forced by many factors, including the very high insurance rates which were applied to cooperative operations.

After much planning and hard work, and with the excellent cooperation of the United States Office of Education and the various State Offices of Vocational Education, such a program was made available to our borrowers in 1942.

For the last seven years it has been our job to help our borrowers put the plan into effect. Now that 36 states are taking part in the program, the task of launching statewide job-training activities is nearing an end. From now on our main efforts will go toward helping to fashion the programs to meet the wants and needs of our borrowers.

We must not lose sight of the fact that although the program is operated on a state level, the REA has a definite stake in it. Our borrowers have invested much of their time and money in the program. We in REA feel that we must help in every way possible to provide them with a program that will meet their needs.



The best way this can be accomplished is through the continued, and in some cases even greater, cooperation among you men; the Trade and Industrial Supervisors in the various State Offices of Vocational Education and the members of the individual state-wide committees.

I think another important factor in the success of the program would be the adoption of a uniform pattern of operation; a pattern which can readily be tailored to the individual needs of each state, but one which is uniform in its operation and objectives. Those objectives, of course, all focus on providing the best possible job training and safety methods for our borrowers.

I think a great deal toward formulating that uniform pattern can be accomplished at the conference here this week.

Your task as job training and safety instructors with rural electrification systems is a great challenge because the majority of new co-op employees are young, untrained farm people who must be taught their duties from the ground up.

However, those same youthful inexperienced employees are the co-op leaders of the future, so it is of great importance that they are taught, and taught well, the methods and concepts of REA.

But even more important from a human standpoint is the part your program has in helping to eliminate the suffering and distress which are the results of injury.

REA cooperatives cannot feel proud of their past or present safety records. They have always had much worse safety records than commercial utility companies. The chief reason for that has been the inadequacy or total lack of job training and safety programs in the past. However, they have a right to hope that through the comprehensive safety program promised them, and which you are going to discuss here, deaths and accidents can be cut to a minimum.

For you are now in a position to remedy the unsatisfactory situation of the past. The co-ops rightfully expect good and immediate results. So it is doubly important that the program you carry into the field is one that will effectively and fully meet the wants and needs of our borrowers.

When this program is working the way it should, there will be no record of 25 accidental deaths among workers employed by REA cooperatives in nine months as there is to date this year. Twenty of those men died by electrical shock. As in most cases in the past, those deaths were not due entirely to negligence -- but rather to the fact that those men did not know enough about their jobs to perform them safely.

Your job training and safety programs will bring about two very important benefits to co-ops and workers alike. First, a well-trained employee automatically works with greater assurance, speed,



and safety than one who is puzzled or confused about certain phases of his job. Secondly, a well-trained employee will work with greater understanding with his employer, and that, in turn, will create better employer-employee relations.

It must always be remembered that there is no substitute for skilled workmen, doing a workmanlike job, with safety for themselves and the rural people whom they serve.

And always remember that we in REA stand ready to assist and work with you in every way possible for the further future success of this program.



Today I am speaking to you with the mixed views of a farmer, an REA co-op president and an educator. Each of these three categories, it seems, has a unique tie-in with the conference you are beginning here today.

As a farmer, I am fully aware of the great importance a successfully operated rural electrification program is to the economic and human welfare of rural America. Therefore, as a farmer, I am keenly interested in seeing that every thing possible is done to assure the continued success of the REA program, a program which has been acclaimed by the whole nation as outstanding.

Its continued success, I feel, can be assured only by a comprehensive program that will train the rural youth of today for the role of leaders of electric cooperatives tomorrow.

Speaking as the president of an electric cooperative, I know how vital an effective job training and safety program is to the successful and economical operation of such a specialized business. I know the drawbacks and the dangers that come from having inadequately trained employees engaged in the greatly important, and sometimes hazardous, work of bringing electric power to the farmers of America.

I further am aware that accident costs, due mainly to untrained employees, can in some cases jeopardize the financial condition of an electric cooperative.

And as an educator, I fully realize the problems you face in setting up a job training and safety program that will meet the needs of REA borrowers. That program must be designed so that it not only teaches farm boys to become competent technicians, but also instills in them the cooperative way of thinking so that they will be prepared some day to take over the reins of the rural electrification program.

Any job training program that meets the needs of REA borrowers must have, as an immediate result, greater job safety among employees. Good job training and safety measures are synonymous.

REA borrowers know that accident costs, unlike most business expenditures, are nonproductive. They are pure economic waste. The dictates of good business practices require that these nonproductive costs be kept to an absolute minimum.

That is why a majority of REA borrowers are investing their time and money in job training and safety programs. They feel that the prevention of accidents and the proper training of employees are important responsibilities of management. They consider that expenditures made for accident prevention and employee training are operating costs, the same as bookkeeping, payroll and other legitimate financial outlays.



The borrowers know that effective training and safety activities pay their way through increased efficiency and the curtailment of nonproductive expenses.

The REA borrowers have put their faith in you to give them the type of program they want and need.

Speaking as co-op president, I can give you some very definite ideas of the results we expect from such a program.

First of all, we feel that our co-ops should show a gradual and material increase in efficiency and economy of operation as the program progresses. It follows that when an employee thoroughly knows his job he will be able to do this work faster and better, thereby bringing about a saving of time and money to his employer.

That, in turn, should create a higher morale among employees, because it is a known fact that well-trained workers are happier and much more interested in their jobs.

This serves to build a good foundation for employee-employer relations, resulting in better understanding between management and labor. That is something the world is very much in need of today.

But, primarily, we would expect from the program in immediate and decided drop in the number of accidents. That, of course, will come if the employee has been taught how to perform his job well. When safety of the worker improves, the other benefits from such a job training program will come automatically.

Thus, on one hand, the successful program will result in a happier and safer group of workers. On the other, REA borrowers will be able to measure their benefits in time and money saved in the more efficient operation of their business.

But even more so, a job training and safety program that meets the needs and wants of REA borrowers will continue to make the rural electrification program in America the sound investment it has been to both the Government of the United States and the farmers who otherwise would not have electricity today.

As I said before, the borrowers have put their faith in you to give them the type of program they need.

The responsibility of the safety and job training of our workers rests squarely upon your shoulders. I know we have placed our faith in good hands.



TRENDS IN MATERIALS AND EQUIPMENT  
FOR TRANSMISSION, DISTRIBUTION AND CONSTRUCTION

by

Joseph E. O'Brien, Chief  
Technical Standards Division  
Tuesday, October 18, 1949

In discussing this subject emphasis will be placed on the part played by standardization in the development of rural power systems, and in particular to those phases of standardization which are of greatest interest to Job Training and Safety Instructors.

Two of the major objectives of standardization are the production of more and cheaper goods and services, and the development of more effective and safer practices. Both of these objectives have been kept in mind in the REA standardization program. The magnitude of the construction program is ample evidence of some progress in attaining the first of these objectives. Progress in the second, the development of more effective and safer practices, does not yield such startling statistics, but marked gains have been made in this respect also. In fact, your conference this week bears testimony to our vital interest in this objective and of our determination to do something about it.

One important characteristic of standardization is that it is dynamic. New materials and equipment are constantly being developed, and job methods and practices are constantly being improved. A standardization program must be sensitive to these advances and must utilize them to the end that their benefits are available to all. An authority on standardization has aptly stated that:

"Standardization must be the means whereby the best is acquired and used, with the best being continued in use only so long as it remains the best, and being discarded when something else has proved to be better from a broad point of view."

It is appropriate at this point to describe the standardization procedure used in REA, with the thought that your knowledge of its operation may lead to constructive suggestions on your part.

In REA standardization of materials, equipment and the design of major power system components is accomplished by three committees, known as Technical Standards Committees "A," "B" and "C." These committees represent the REA Administrator in standardization matters. Committee "A" is the working committee, Committees "B" and "C" act as appeals committees, and Committee "C" has the added function of establishing the rules and regulations governing the operation of all three committees.



Committee "A" meets once every week, usually on Tuesday morning at 10:00 o'clock. It is made up of representatives of five of our divisions, Applications and Loans, Engineering, Management, Power and Technical Standards. The membership rotates, one new member coming on the committee every three months. This arrangement provides the continuity that is necessary, and at the same time brings a fresh viewpoint to the committee every three months and prevents it from getting into a rut in its thinking. The unique thing about the committee is that, although it may split its vote in any way, the only decision it can make that is final, is that of unanimous acceptance. In other words, for a standard piece of equipment or a design to be accepted by Committee "A," it must be accepted unanimously. If any other result occurs it automatically goes to Committee "B," and Committee "B" may consider the item and reach a binding decision on a majority vote. Committee "B" may also call in the sponsor of such a standard or piece of equipment and give him a hearing, which is not true of Committee "A." Which ever way Committee "B" votes is the final decision, unless the sponsor appeals it to Committee "C," and if, after Committee "C" reaches a decision, he is still unhappy about it, he may appeal to the Administrator; but you can see that this screening process takes a very detailed and technical load off the shoulders of the Administrator. There are very few meetings of Committees "B" and "C," and very rarely does a problem get to the Administrator's desk.

Let's take a look at a typical meeting. Right now we are working on the use of higher voltages for distribution. Well, we get a request from Mr. Shaughnessy of the Engineering Division saying, "This work is getting active, it looks as if it is coming into its own, we would like to have a set of construction drawings." So we turn it over to our Specifications and Drafting Unit and it works up a set of drawings, taking into account REA practices and Safety Code requirements. These drawings are submitted to Committee "A." On Committee "A" we have the representatives of the various divisions, enumerated above. These representatives are usually at the Section Head level, and have had considerable experience in REA, and in other segments of the power industry. Committee "A" considers the drawings. If there is any question about them, the drawings may be referred back to the Specifications and Drafting Unit, or may be referred somewhere else such as the Engineering Division, or the Labor Relations and Safety Section of the Management Division. They may take considerable time to get through Committee "A," and if, in the end, there is still a difference of opinion, they automatically then, having been turned down, go to Committee "B." Now Committee "B" does not have a rotating membership and is made up of the Assistant Chiefs of the same divisions mentioned before. It looks over these drawings, it may call in the men who reviewed them, it may sustain Committee "A," or it may reverse Committee "A," and if it does accept the drawings, they become standards. Now the sponsor of the drawings, if they are not accepted, and if he feels strongly about it, can appeal to Committee "C." Committee "C" can do all the things that Committee "B" can do, but at a higher administrative level. It is made up of the Chiefs of the five divisions



and a representative of the Office of the Administrator. Suppose Committee "C" turns down the proposal and the sponsor of it still feels he has a case. He can then go to the Administrator for a final decision.

As I mentioned, most of these cases are reviewed in some detail. The production is quite heavy. Just as a matter of interest, Committee "A" will probably handle 450 or 500 cases this year, an average of 8 or 10 per meeting, and in spite of that much activity by spreading the load we manage to give each case quite a thorough working over. I have gone into some detail in describing these committee meetings because I think they form a rather unique procedure. It is not perfect; and we know specifically wherein it is not perfect, but I wanted to discuss it in detail because I think we can benefit from your more complete knowledge of the REA standardization procedure.

For example, we are pretty thoroughly deskbound in this work. Fortunately, last year, we had one of our staff members attend three foreman's conferences in the Middle West, and I think he and the committees gained quite a bit from this experience. You people are quite a bit closer to problems in the field than we are, and we appreciate your comments and suggestions. Now, it is unavoidable that, when comments come in, and are reviewed by the committees, only a certain number of them will be adopted and put into practice. This does not mean that we don't take kindly to suggestions. The point is that a man may make a very good suggestion, but there are ten other solutions to the problem that are also perfectly good. So when the committees consider a suggestion it may well turn out that the suggestion, which is quite good, may not fit into the program and may not be accepted. I point that out because "rejection slips" are never welcome. But I do want to assure you that we would like to have your suggestions, and while not all of them are apt to be put into effect, all of them will receive our very best consideration.

In carrying out standardization work year after year we can pick out these things we call "Trends." I have listed several "Trends" which should be of particular interest to Job Training and Safety Instructors:

1. Use of higher voltages (14.4/24.9 kv) for distribution in thin areas, instead of a network of transmission lines and substations.
2. More live line work, due to increasing demands for continuity of service in rural areas.
3. More joint construction, including power and communication circuits on the same pole, and transmission and distribution circuits on the same pole. Also more double circuit construction.



4. Use of extended deadends to provide proper climbing and working space for live line maintenance.
5. Use of half-length armor rods in place of the loop for the attachment of hot line clamps. Such armor rods may be installed on live circuits and in addition, tend to reduce conductor vibration and minimize radio interference.
6. Use of crossarm construction instead of vertical construction in areas subject to heavy snow or sleet conditions.
7. Use of special heavy construction with clamp type insulator pins for larger conductors, or conductors having a breaking strength of more than 4,500 pounds.
8. Use of overhead neutral or static wire for three-phase transmission lines in heavy lightning areas, and for short distances adjacent to substations to protect poles and conductors from direct strokes.
9. Use of conventional transformer assemblies with arrestor and cut-out mounted on the transformer tank rather than on the crossarm.
10. And finally we have had a suggestion that the present transformer assembly units be changed to provide unobstructed climbing space to circuits above the transformer.



## SOME TRAINING RESULTS AND THE JOB AHEAD IN TRAINING

by

A. E. Becker, Manager  
Association of Illinois Electric Cooperatives  
Springfield, Illinois

In talking on the subject "Some Training Results" I will need to apply my remarks to the results that have been obtained in Illinois through the activities and programs of our Illinois Safety and Job Training Committee.

I am very proud of the fact that I served on the first Safety and Job Training Committee in Illinois. This Committee was organized on May 20, 1941, at Petersburg, Illinois, and was the first one set up in the United States to take care of this phase of our over-all Rural Electrification Program. It also gives me a great deal of satisfaction to note that the whole Safety and Job Training Program is operating as it was outlined in the beginning and has been so successful.

In my opinion there are two reasons why the Safety and Job Training Program has been so successful.

1. It was originally set up on a sound basis to give our cooperatives a service that is essential for sound business operation of each cooperative. In other words, no cooperative can hope to succeed unless they recognize and take an active part in the Safety and Job Training Program.
2. A major portion of the credit for the success we have obtained to date in this program should go to the active support of the U.S. Office of Education through it on down to the State Board of Vocational Education. It does not take too much imagination to understand the assistance which these agencies have given to us in the promotion of this program.

In the beginning more emphasis was placed on safety than on job training or skill on the job. As I recall, our first step in Illinois was to learn first aid work and to secure advanced red cross cards. The Menard Electric Coop. produced three Red Cross instructors and set up five mobile Red Cross units on its trucks to serve the communities in our area. In the early days emphasis was placed on safe driving practices. We held safe



driving contests at Petersburg with all employees taking part. At the end of a certain date the losing team would treat the winners of the contest. These contests created rivalry and interest and resulted in making all of us better and safer drivers. However, these were but the first steps to our becoming better trained employees for our jobs.

One of the most important results of our training program has been to change our thinking of what it will do for us. We have come to realize that the quality of service that we can expect to receive from an employee will be in ratio to the amount of training and safety practices he has acquired. This same rule applies to the cooperative and its members, in that the quality of service it gives to its members should progress in direct proportion to the construction program. As more and more uses are found for electricity on the farm, it becomes the responsibility of the cooperative to give better and more dependable service to its members. I believe that our training program has given all of us a new slant on the importance and far reaching effects safety and job training has on the whole rural electrification program. It seems to me that it can be summed up in one sentence. "The Modern Way To Do a Job Correctly, Is The Safe Way To Do a Job."

In the early days of the program in Illinois we had a few managers who only gave lip service to the program. They begrudged the time required for their men to take part in a meeting each month when the safety instructor came around. It was not until one of these cooperatives had experienced two totally disabling accidents in one year and the compensation insurance rates shot up that they finally saw the light, and all became active supporters of our program.

Along that line I did not fully realize what results could be accomplished by this program until several years ago when I was visiting a small coal mine taking 3 phase service from the Menard lines. While in the office of this mine I saw a notice posted on the wall giving the latest compensation insurance rate this operator paid his insurance carrier. The rate was over \$16.00 per hundred of payroll. Upon inquiry regarding this high rate, I was informed that the rate was much lower than formerly, due to safety measures they had adopted. I can readily see how high the compensation insurance rates would go if our cooperatives did not maintain a good safety record.

I think the results will speak for themselves. In 1943 all of the cooperatives in Illinois were paying a compensation insurance rate of \$3.84 per hundred on their outside men. In 1949 the compensation insurance rate has dropped to \$2.72 per hundred of payroll. When you take into consideration that we now have 634 linemen and groundmen working for the 27 cooperatives in Illinois you can readily see the tremendous financial saving that has been made in our state as a result of our Safety and Job Training Program.



In addition to the actual savings made by the cooperatives through trained employees, I believe this program fosters a better employer-employee relationship. The trained employee is more contented and appreciates his job more. He has that added incentive and assurance that he is an important cog in the wheel and further that he will receive advancement in the future when an opening is made.

Our training program creates a sense of security in an employee which I believe in turn creates better team work on the job. A good example of this team work was the emphasis which was placed on intensive and unit training by all of our armed services during this last war. No man would want to volunteer to go into combat with a green, untrained unit. I think the same sense of individual security is developed in an employee working in a gang of men trained as a unit. The job training and safety program is creating better team work.

I think one of the outstanding results of our Job Training and Safety Program is the uniform methods it has promoted for all phases of work on our coops. Again, I would like to recite a personal experience which I believe will give you a picture of what training and uniform methods will do. During the ice storm we had the first part of January this year in central Illinois, the Menard Electric Cooperative had over three-fourths of its entire system out of service. We concentrated our efforts on getting the main feeder lines repaired first. This was an almost hopeless task for the limbs and trees kept breaking lines faster than they could be repaired. Finally, after working two days and not making any gains, we sent out calls for help from the coops east and south of us. We received five trucks and ten men in answer to our call from five cooperatives. We furnished each truck with maps and sent them out under the supervision of one of our own trucks. It was remarkable how well these men fitted in with our crews with no apparent difficulty. I think we had a good demonstration at Menard of what can be accomplished in an emergency. Our training program in Illinois is making this possible.

Another outstanding result of our training program is the uniform method which has been developed to unload poles. Before this problem was carefully analyzed and a uniform method of unloading poles was adopted, we had several fatal accidents in our state. I think our compensation insurance rate, mentioned before, tells the story of how we are holding accidents to a minimum in this phase of the job.

I think our state and national conferences tend to foster and develop uniform methods better than any other way. We need to strive for better attendance of managers and line foremen. In my opinion, the discussions and exchange of ideas bring out uniform methods and work practices most favorably.



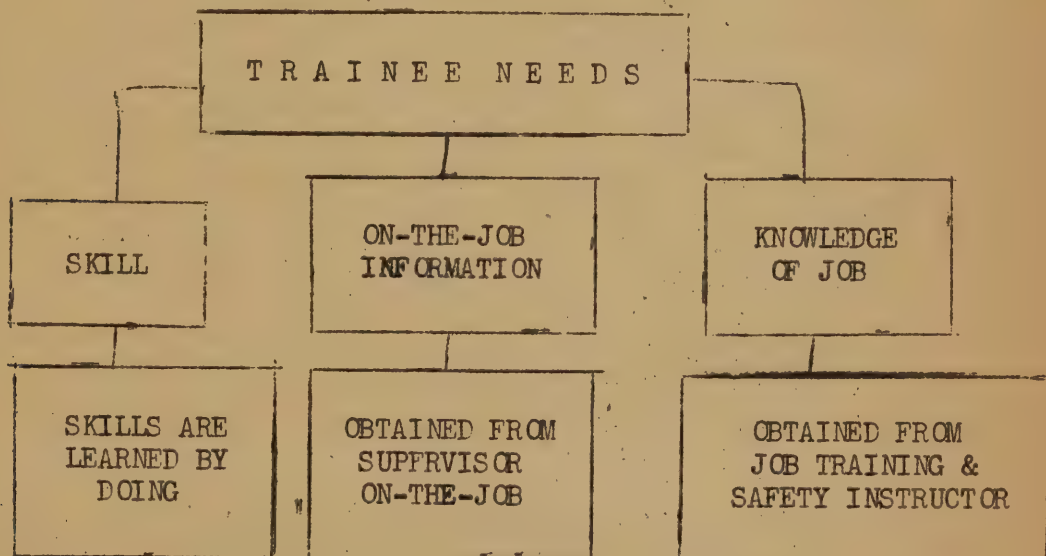
In summing up some training results of our Job Training and Safety Program, I would say that the results speak for themselves. We have become safety minded. We have achieved a large financial saving for the cooperatives. We have helped produce efficiently trained employees who are giving a high quality dependable service to the cooperatives and farm families they are serving.

However, we can not rest on our laurels for we still have a job ahead of us. There will be more maintenance and repair work done on existing distribution lines as new construction work is completed. I have received numerous reports from various parts of our state of poles rotting off and toppling over in high winds.

We will need more training for hot line maintenance work on transmission lines. A large number of our coops. in Illinois already have, or are now building, transmission lines on their systems. There are more power coops. coming into existence where special training will be required on high voltage lines and also for the power plant employees.

We are also confronted with a new type of training and that is training linemen for telephone work. Many of our cooperatives will be in the telephone business in the future to the extent at least of maintaining service for the telephone cooperatives.

As for ways and means of handling the training for the jobs ahead, I can explain our thinking in Illinois of how it should be done by the use of this chart.





To assist the trainee in obtaining the three needs shown on the chart, three human factors enter into the problem.

1. The individuals trainee's mechanical and manipulative ability and the rapidity with which he performs and masters the skill by doing the job himself.
2. The knowledge of the job is provided by the job training and safety instructor.
3. The third personal factor which bears upon the trainee is the ability and efficiency of the supervisor with him while he is performing the operation.

The upgrading of this individual in order to make him an efficient supervisor is the problem which we plan to work with very intensively in the near future.

The concentrated effort of all three of these factors should and will, we think, produce a well-rounded and efficient employee.

During the past few years as I have indicated we have attempted to meet first needs first in Illinois by offering training to line personnel, groundmen and truck drivers. In this program we have endeavored to stress the factor of doing a job in the correct manner and our feeling is that if the job is done correctly, it will be safe. Safety as a separate entity from doing a job correctly has not been the major emphasis in our program although safety is certainly a part of it.

Our reason in Illinois for offering training to the above-mentioned types of employees was that we felt it necessary because of the rapid expansion of the cooperatives, and the fact that the labor market did not have available trained personnel to supply the needs of the cooperatives at the time this expansion was developing. We, in Illinois, feel that we have done a satisfactory job with this type of employee and that we are now ready to assist in the upgrading of the supervisory, or foreman personnel of the cooperatives, with such things as personal and human relation problems, planning and organizing the work, getting out production, care and maintenance of equipment, storing and handling materials, etc.

Most of you are familiar with our present plan of the circuit instructor visiting the cooperatives periodically for his job training meetings. Our thinking with regard to supervisory training is that approximately five area meetings will be held in the state in which supervisory personnel will attend for participation in the course. The final details of this plan have not as yet been decided on, and this part of the program is in the formative state at the present time.



We do not intend to decrease the amount or the type of training which we have offered the line personnel in the past, but we mean to supplement the line personnel program with a program for supervisory personnel. The chart, I think, explains the pattern which we hope to follow in the state



## HUMAN RELATIONS IN TEACHING

by

J. E. TePoorten, Coordinator  
Wisconsin Vocational and Adult Schools  
Madison, Wisconsin

On several occasions in the past I have appeared on your program and on one occasion I recall I discussed public relations and your job. Today I have been asked to speak on human relations in teaching. I presume those who asked me to speak on this subject really had in mind human relations as a tool of good teaching.

Many books have been written on the subject of human relations and their place in the workaday world, but I want to give you just a few highlights to be considered in dealing with human beings, particularly when you want to teach them something.

Thirty-six years ago last month I began teaching school in my native state of Wisconsin. I recall that September morning very vividly. That day I knew all the answers to all of the questions, but do you know what happened? They changed the questions! Ever since that time I have had to find new answers to new questions.

Technology has advanced so tremendously in the last third of a century that few of us realize the impact this has had on the relationship of one man to another. In this free private enterprise system we hear so much about, I believe the key word is "think". The working people of this nation have not only the right to think and the ability to think, but they are expected to think. Because of this, I believe the United States will always be the leading nation of the world in invention and discovery. Because we will continue to lead in invention and discovery, we will always be living in a fast-moving, changing world. That means that we must constantly adjust ourselves to these changes, not only to the equipment and the machinery that is the result of our thinking, but also to the men who do the thinking. The training of our people to meet their responsibilities as workers in such a nation is no longer a fad, it is an absolute necessity.

Using our understanding of human beings as a teaching device is common practice to all those who attempt to teach. That applies not only to teachers in the classroom, but also to foremen, superintendents, and all the other people who must tell or show someone else how to do anything. Therefore, in this short time, I would like to call your attention to a few fundamental things we must deal with in the human being.



Human beings are not much different the world over. All people have fear, love, courage, temper, kindness, drive, energy--and every one can either be an asset or a liability, depending on the individual and how he is handled. There are only two kinds of people in the world, selfish and less selfish. The unselfish individual has not yet appeared on the horizon, if he ever will. When you approach a human being with the intention of teaching him, you must approach him with the understanding that all men have self interest, self respect, and job pride.

If you, as teachers, will recognize that every man, regardless of who he is, where he is, whatever his creed or color has those three fundamentals, much successful teaching will result. Any attempt to belittle any of these three will end in disaster.

In solving the human relations problems in teaching, we have a pretty sure place from which to start. That place is you. If you will analyze yourself in the light of the problems that arise and figure out the method you would like to have applied to you, you will find that it is exactly the treatment the other fellow will like and to which he will respond. Whether or not you believe it, we are all just ordinary fellows. We are all very much alike. While in a humorous sense we may say "people are funny" and know it to be true, we must also remember to include ourselves.

One thing that has adversely affected teaching has been the erroneous belief that knowledge of a subject is all that is necessary to teach it to others. If that were true, we would not need any teacher training institutions at all. The danger of that kind of thinking is that it has made the teaching profession a place for some who have only a knowledge of subject matter and do not possess the other qualifications essential to put over the job. I mention that to you today because all of you here are skilled craftsmen and you know the subject matter you are expected to teach. However, you have entered upon a new job--teaching others. You must teach them those things they must know if they are to do their jobs safely, correctly and efficiently. That means that in conferences like this you associate with your fellow teachers to determine the best methods and techniques by which you can put over the subject matter to those who must learn.

A person who attempts to teach others must make a study of the human being in a general way and learn how he responds to certain conditions. But a teacher must also learn to apply these general truths to a specific human being in specific situations.



Teaching is a science and an art. You must learn both. It is hard to describe what the art of teaching is. It is the deep inner understanding of one human being by another. It is his kindness, his mannerisms, his flexibility and his approach that make an artful teacher. If a teacher knows all the science of teaching, the methods and techniques, but does not include the art of teaching, the human element, he is a very poor teacher. You know the kind of teacher I mean--you have had that kind. When that kind of person tells you what to do and how to do it, you are disgruntled, you do not quite understand and you do not feel like carrying out those instructions. On the other hand, you have had people tell you something you understood easily in a way that made you happy to carry out those instructions. That, in my judgment, is the art in teaching.

Your responsibility as a teacher in the rural electrification program is not in making things, in building or maintaining lines. Your job is to teach people to think and to know how to think, in addition to helping them acquire the knowledge they need. You have to teach the men you now have. You can't exchange them and you can't make them over completely, but you can work with them and improve them. You can apply the fundamental principles of human relations to the assets every man has and make him a better worker.

Your frame of mind, your attitude toward your job, must be right if you are to be a successful teacher. This is particularly important when you appear before a group. If you are in a disgusted mood, everyone you are trying to teach will be in with you. The group will mirror your moods, but it will also mirror your sincerity and your cooperation.

The Rural Electrification Administration and the U. S. Office of Education have made possible these training conferences to improve present instruction so that the objective of safe and efficient workers will be realized. If we are to have a successful program, we need outstanding instructors. Sometimes I hear people say, "He's all right, he's average". There is no place in this program for average people, to say nothing of average instructors. If I were to give a definition of "average" it would be that "average" is the place where the lousiest of the best meets the best of the lousiest. While that may not be a very dignified definition, it clearly indicates why average is not enough.

You are among the pioneers in a great movement. The further success of the rural electrification program in this country may well depend on how you conduct yourselves in the teaching responsibilities you have accepted. As teachers of rural electrification you are debtors to the past, you have a tremendous responsibility in the present and a great challenge for the future.



NATURE OF AND FIRST AID FOR BODILY  
INJURY CAUSED BY ELECTRIC CURRENTS

by

Dr. Carl J. Potthoff  
National Director of First Aid  
and Associate Medical Director  
American National Red Cross  
Medical Services  
Washington, D. C.

The National Office of Vital Statistics reported on November 10, 1949 that during 1947 there were 338 deaths in the United States caused by lightning, and 867 due to other electric currents. Among the latter, 816 were males, and only 51 were females. 745 of the 867 people were in the 15 to 64 age group. Thus, almost all were adult males in active life.

Several articles in the Lineman late in 1947 and January, 1948 gave valuable information concerning some effects of current upon the body. It was stated that the flow of current through the body, the amperes, is the significant aspect of electric hazard. Voltage and resistance are important, in that they affect the current flow. It was further stated that from 8 to 15 milliamperes lead to painful shock, but the victim can still release his hold. At about 15 milliamperes, muscle spasm caused by the current prevents this release; at 20 to 50 milliamperes, breathing becomes difficult, and at 100 milliamperes, the heart is often thrown into ventricular fibrillation. At about 200 milliamperes and over, the muscle contractions become so severe that fibrillation does not occur. Ventricular fibrillation is an extremely grave condition. The figures are approximate and reflect general rather than invariable findings.

Electrical current injures the body through mechanical effects, heating effects, and through electrolysis leading to chemical and body cell changes. The mechanical injury occurs as high tension current blasts its way through the body, even fracturing bones and disrupting organs, particularly where it encounters tissue surfaces having differing resistance levels. These mechanical effects, of course, are less if the current flow is small. The heating causes skin and deeper tissue burns and may lead to steam formation. Steam formation is extremely harmful to the delicate body cells.

The longer the current flows through the body, the greater the heating and electrolytic injuries are likely to be. Further, skin resistance decreases as the current flows; consequently, as the flow persists, its amount becomes somewhat greater because of this resistance decline. Speed in shutting off the current is important not only in order to undertake resuscitation, but also in order to prevent further damage from the current.



Several important specific effects of the current upon body structure are the following: Small clots may form in the tiny blood vessels, thereby impeding the blood flow and the later functioning and healing of affected tissue. Passage of normal nerve messages may be prevented, so that some body processes don't go on as they should. The muscles along the current pathway may go into spasm. Consequently, for example, a victim may not be able to release his hold on a wire. Especially at 100 to 200 milliamperes flow, as indicated above, the heart undergoes ventricular fibrillation. Its tiny fibrils contract in uncoordinated fashion and, consequently, the heart does not pump blood effectively.

A burn wound may form at the site of entry of current into the body, and perhaps also at the exit. Sometimes no surface injury is visible. The burns are often deeper than they seem and heal slowly because of damage to the blood supply. The heat generated in the body is greater when the current meets resistance. Thus bones may even be charred.

So far as the first aider is concerned, he should think particularly of the following possibilities: (1) stoppage of breathing, (2) internal injury, and (3) burn wounds.

He should remove the victim from contact with the electric hazard as quickly as possible consistent with his own safety. However, compress and release the chest regularly while getting the victim into proper position. It is not helpful to give countershock to asphyxiated victims, such as by striking them or letting them drop a few feet. Rather, this procedure, sometimes advocated, may be harmful. Then, he should give artificial respiration if breathing has ceased. He should be extremely gentle and wise in handling the victim, remembering that injury to circulatory organs and other internal organs may have occurred and that fractures may be present. When giving artificial respiration for asphyxia, the first aider must get started quickly. It is best to have the head end of the victim's body somewhat lower than the rest of the body, the lower jaw should not be permitted to sag and the head should not flex forward at the neck.

When breathing is restored, further attention can be given to examination and planning for transportation. Usually, it is best to summon a physician to the scene. The victim should not be permitted to arise until medical advice is secured. Sterile dressings should be placed over burn wounds. The victim should be adequately blanketed. If some time will elapse until medical attention is received for a burn, a warm Epsom salt pack may be applied to the burn.

Statistics show that many electrocution victims can be saved. The records show that recoveries are much commoner in organizations where artificial respiration is widely understood. There is, unfortunately, no specific first aid action now known to be useful for



ventricular fibrillation. The condition cannot be diagnosed with certainty at the first aid scene. Probably, in a few cases, it corrects itself but, in general, the outlook is bad if this condition is present. The hazard of ventricular fibrillation should warn us all of the dangers carried by low voltage current. General observation shows that hazards are far greater when the electrical apparatus, the hands or the floor or ground upon which one stands is wet. Beware even more than usual of working around electricity in wet weather.



## CURRENT FLOW

$$\frac{\text{Volts}}{\text{Resistance}} = \text{Amperes}$$

### Body resistance

Dry skin - 100,000 to 600,000 ohms

Wet skin - varies; may be 1000 ohms

### Internal body

Hand to foot - 400 to 600 ohms

Ear to ear - about 100 ohms

### Examples

$$\frac{22,000 \text{ volts}}{220,000 \text{ ohms (dry skin)}} = 0.1 \text{ amperes or } 100 \text{ milliamperes}$$

$$\frac{22,000 \text{ volts}}{1,500 \text{ ohms}} = 13.8 \text{ amperes or } 13,800 \text{ milliamperes}$$

(wet skin at 1000 ohms plus  
500 ohms internal resistance)

$$\frac{120 \text{ volts}}{1,500 \text{ ohms}} = 0.08 \text{ amperes or } 80 \text{ milliamperes}$$



## RESPONSIBILITIES OF JOB TRAINING INSTRUCTORS TO FOREMEN

by

Wayne W. Black, Supervisor, RFA Safety in Job Training  
613 Orange Avenue, Ocala, Florida

Foremen are the key men in the operation of our RFA Co-op. Manager governs the business affairs of the Co-ops. Engineers plan, design and map out lines, making blue prints and job orders. The foreman is the man that takes the job order, men, material and equipment and builds and operates lines. Through muddy swamps, over rough hills and mountains, fields and plains, snow and ice, heat and cold, fair weather and foul, the foreman is the man that is leading the men.

The manager and engineer are looking to the foreman to get the job done, safely, efficiently, and according to specification, and the engineers design. The men are looking to the foreman to lead them, to lay out their work. To see that they have the proper tools, equipment and material to work with, to look out for their safety and welfare, to be a mediator between them and management.

The Job Training Instructor is under a heavy responsibility to the foreman to assist him in his work by giving him proper instructions and training on how to handle his job correctly. Quite a few of our foremen are young fellows who have a small amount of experience as foremen, and who need the advice of the Job Training Instructor.

The instructor should appreciate the above-mentioned facts and realize that if a line crew is to be a safe crew there must be a safety minded and safety trained foreman at the head of that crew, and that it is his duty and responsibility as an instructor to give his very best to help the foreman be a well trained safe foreman.

To accomplish this the instructor must be a man who has the skill and ability to teach and train foremen. To accomplish this he should be a man who is sober, honorable and clean, a man whose life and character commands the admiration and respect of all who know him. A man whose knowledge, skill and experience as both line-man and foreman is respected. He must respect the foreman and the position that he holds, remembering that the foreman is in charge of the crew. The instructor should try to build up respect and confidence in the men for their foreman and be careful not to belittle the foreman in the eyes of his men.

If the foreman is not sold on the idea of safety, the crew will not be safe. The instructor should ever strive to sell the foreman the value and importance of safety, as well as give him safety training. Ever bearing in mind the good foreman not only knows how to build and operate lines and handle men, but that he knows how to do it safely and smoothly.



The instructor should impress the foreman with the idea that he is not trying to show up his weak points and criticize him, but that he is trying, and is ready and willing to help him to strengthen his weak points and be a better and safer foreman.

The instructor should endeavor to call the attention of the foreman to the serious responsibilities he is under as foreman, to his co-op and to his men, that he is not only handling material and equipment that belongs to the co-op and has a high value in dollars, but that he is dealing with human lives also, that poor judgement or careless planning on his part may cost the life of some one who is trusting and depending on him to keep them safe.

The instructor who is failing to do his very best in training the foreman in safety, job planning and seriousness and importance of his job and all the arts and tricks of the trade of foremanship that he can gather, is failing to discharge his duty and responsibility to the foreman as a job training instructor and is falling far short of what the foreman has a right to expect of him.

Remember, a well trained and safety minded foreman will lead a safe and efficient working crew. The foreman is the man that will be planning the work and leading the men daily when the job training instructor is not present. If we have safe crews we must have safe foremen. It is well worth our time and effort to train our foremen to be safe.

Let us all who are Job Training Instructors discharge our duty and responsibility in putting forth every effort we can in developing safe foremen.

Safe working habits is something we develop by study and practice we don't catch it like the measles or a cold. Neither do we inherit it, work-safe is a habit that we train ourselves to do. Looking at a job from the angle of safety there are two ways the job can be done. "The safe way and the unsafe way." We are either working safe or we are working unsafe, usually this depends on the way we have been trained. Safe working habits should become a fixed part of our daily actions. The Job Training Instructors have a golden opportunity to build safe working habits in the men he works with and the foreman are the key men, and leaders of the crews.

To briefly sum up the subject of the Job Training Instructors duty and responsibility to the foreman is to help him develop working habits and the arts of Job planning with safety woven in as a fixed part of it. If we know how to do our jobs correctly we know how to do them safely. A job well done is a safe job. We will reduce accidents, our crews will work more safely, and we will be meeting our responsibility to the foreman as job training instructor when we put forth our best to train our foremen to be safety foremen.

Yours for safety,

Wayne W. Black



Panel Discussion  
on

RESPONSIBILITY OF THE JOB TRAINING  
AND SAFETY INSTRUCTOR TO THE MANAGERS

by

Richard C. Long  
Williamsport Technical Institute  
Williamsport, Pennsylvania

My part of the panel discussion deals with the responsibility of the safety instructor to the managers.

Since safety is the responsibility of the managers, each manager of a Co-operative is interested in a realistic safety program for his employees. The managers duties allow him very little time to put into effect a vital, aggressive safety program. And that is where the Job Training and Safety Instructor enters the picture. Every manager expects this expert to produce a safety program based on the needs of his employees. It is the instructor's job to see that this is carried out.

One of the first responsibilities of any Job Training and Safety Instructor, to the manager, is to help create better employer-employee relationships. He should remain neutral on all controversial issues, such as, discussion of wages or labor, working conditions, etc. The instructor should not condemn or condone actions on either side and should not violate any confidences entrusted to him.

Another type of relation, in addition to employer-employee relation, is public relations. Every instructor covers much territory in his own state and meets many people, some of whom may have gained the wrong impression as to the administration and operation of a Co-operative. It is his responsibility to correct any mistaken ideas and to give a clear picture of the functions of the Co-operatives.

The instructor should command the respect of both the managers and the men. This is very important, because, if he fails here, no matter how well he may teach, the battle is already lost. As you know, the character of an instructor is a big item in commanding respect.

This instructor should better his teaching methods by enrolling in college extension courses or in "on the campus courses" in Vocational Education work. It may take a little time, but the result is well worth the effort, I assure you.

A teacher, such as this, must strive to improve his teaching technique. I recommend a self-analysis approach. One way to check oneself is by re-visiting a Co-operative several weeks after a certain class has met and test the skill and knowledge of the men on the subject taught that particular day.



Certainly, it is a mandatory item to enroll in American Red Cross Courses so that one may become a qualified instructor in First Aid. Here again this takes time and effort, but it is really very helpful in training men in this very vital subject.

Selling the men on safety and trying to make safety contagious is another critical issue. Stimulate interest and enthusiasm by publishing a news sheet to disseminate safety as well as news of interest to these men. Motion pictures, models and other visual aids have a definite share in the class room.

An instructor should help the Safety Committee formulate a training program along with the safety program so that the two will function hand in hand. In the State of Pennsylvania, the training and safety program is based on the changing needs of all the Co-operatives. This is determined by observation of the men on the job and by questioning them to find their needs as well as through discussions with the managers and foremen. From this an overall view of the situation is obtained and a program is then set up to solve the immediate, as well as the future, needs of every Co-operative. Such a program should be flexible enough to fit any special situation that may arise and should be made cooperatively as has already been hinted.

The instructor should understand the hazards of the jobs. Active trade experience is very helpful to him here. Why not have your safety man analyze a particular job before and after its completion? Each man must be constantly on the lookout for new hazards and should immediately report any unsafe practices and conditions to the management.

A good teacher will become familiar with all the state safety regulations pertaining to electrical codes, handling of dynamite, construction practices, etc. Check to see that all the safe practices recommended by R.E.A., insurance companies, National Safety Council and Underwriters Electrical Code, are put into use. Another way a Job Training Supervisor may help is to send for information which may be had on the construction, maintenance and operating characteristics of new line material and automatic line equipment. This may be had by writing to manufacturers of such equipment for this information. A definite must, for this leader, is that he should meet the leaders of his field and discuss the problems of the industry with them. Yes, and he should submit a written report of his training activities to the manager of each Co-operative as well as to his boss, if he has one. These reports should contain the instructor's past and present program with a list of some recommendations on how to improve the safety program. An example might be the recommending of the use of certain new tools, or the use of safety devices and the use of new work methods.

At all times he should point out to the managers the strengths and weaknesses of the line practices of the employees in such a way as not to offend either the employees or the employer. Report any

emotional stress among the men as this is possibly a greater contributing factor to accidents than is generally known. We have found, by survey, that about 54% of all accidents involve the man's mental attitude. All accident reports should be studied and filed for their potential value in planning future safety programs.

These items which I have mentioned and many more, could form the basic responsibility of the Job Training and Safety Instructor to the managers.

Managers! Entrust your training of your employees to those who can make the employees safer and more efficient workers. Line work must be done the only way, the safe way.



## REPORT ON GROUP B WORKSHOP

### The Use of the Conference Method in Teaching

conference leader: W. A. Ross  
Consultant, Public Service  
Occupations  
U.S. Office of Education

NOTE: This summary report covers instructional and conference work of Group B during the 16-hour course offered October 17-21, 1949.

#### A. Introduction

Mr. Ross first called attention to the fact that there were many different kinds of conferences including:

1. The simple discussion group.
2. The round table discussion.
3. The panel discussion.
4. The general conference
5. The technical conference.
6. The business conference.
7. The training conference.

He also stated that a real conference, worthy of the name, was not "an organized way of wasting time," and that undirected pointless discussion did not lead to anything of lasting value. Other points brought out by the leader in introducing the course were:

In face of all the mistakes made and the criticism leveled at the conference as a device, no better way has yet been found to develop ideas, harmonize points of view, pool experiences, capitalize on group experience, and solve problems.

Speechmaking, lecturing and oratory have no place in the conference procedure; however, a good lecture is superior to a poor conference.

As much work and skill goes into a good conference as goes into the making of a fine piece of furniture.

Telling is appropriate when the subject is known, or considered, to be beyond the experience and knowledge of learners. The conference is appropriate when members of the group have common interests, and some knowledge and experience of the subject to be discussed.

The lecturer is assumed to have superior knowledge of his subject; the same is true of the salesman and the specialist.

In a conference it is assumed that there is a leader but that everyone included and present may have something worthwhile to contribute. No one can ever hope to lead a conference successfully unless he is fully aware that a well-selected group together knows more about the subject under discussion than he does.

In a true conference:

1. You get directly at the problems.
2. You focus attention, pool and combine experience.
3. Solutions are sought out and tried out.
4. Decisions are made as to
  - a. What to do.
  - b. Good routes and procedures to follow in doing it.

Mr. Ross further called attention to the fact that during the week he would, of necessity, have to serve in several different capacities. This was due to the fact that included in Group B were persons who had no experience with the conference method along with others having limited experience. Under these circumstances he stated that his duties would be those of a teacher, a conference leader, and a critic on certain demonstrations to be given by members of the group later in the week. He also emphasized that no attempt would be made to train general conference leaders, but rather to assist, the members of Group B in making better use of the conference method in teaching.

#### B. When to Use the Conference Method in Teaching

There are three commonly accepted teaching procedures:

1. Informing.
2. Instructing.
3. Conferring--The conference.

In deciding whether or not to use the No. 3 method indicated above either in the classroom or out on the job, ask yourself this question:

Do the individuals who will comprise the group have some knowledge of the subject--some actual worthwhile experience to "pool" on the specific problem to be discussed. If the answer is "no," then the informing or instructing procedure will surely be more effective. If the answer is "yes," a modified conference procedure, at least, should be appropriate.



The main elements of the conference are:

1. People--learners with contributions to make.
2. A leader--director of discussion.
3. An appropriate place to meet.

Many subjects in the formal school do not lend themselves to the conference method of teaching due to the nature of the subject and the lack of information and experience on the part of the students. The conference method is particularly adapted to in-service training of employed adults.

Some examples of good places to use this procedure in Rural Electrification training are:

1. In teaching safety and accident prevention.
2. In teaching public relations.
3. In teaching self-improvement.
4. In attacking jobs and solving specific problems to improve job efficiency.
5. In teaching groups in which there may be a wide variation in schooling and work experience but whose interests are now common.
6. In analyzing job responsibilities and duties of various kinds and at various work levels.

Size of the group to confer is important. Ideal conference size is from about 15 to about 25. Less than 8 or 10 persons may be unprofitable because of a lack of ideas and reactions. However, when groups get to 45 or 50 in size, they are usually too large for one leader to handle properly. It is better to divide such groups.

### C. How to Use the Conference Method

Work the conference in as a separate device or as a device on your teaching plan--as a part of the presentation step--if it is the best device for the purpose. Remember you need no "high powered" speech to start off with.

Plan in advance. Use a conference work sheet which supplements your teaching plan sheet. Put down on this work sheet the steps you intend to follow under such heading as these:

1. Opening up the problem to be discussed.
2. Getting the discussion started.
3. Questions to draw out the members of the group.
4. Getting acceptance and agreement.
5. Summarizing.

Go on from here with your regular teaching plans.

Gather your group together. Seat yourself at the head of the group, whether indoors or outdoors.

1. Size up your group. Try to determine whether they are mostly with you or mostly need to be shown and convinced. Watch for the skeptic, the trouble maker and too talkative fellow.
2. Start the conference. Be on time. Speak with confidence. Generate interest and respect. Make opening remarks carefully and briefly. Put the first problem which may be two or more opposing ideas for opinion. Speak clearly. Get the "ice" broken. Wait. Give chance for the group to follow your lead and think. Acknowledge responses but don't take sides. Give chance for several to respond without doing too much talking yourself.
3. Insert follow-up questions. Make these rather extemporaneous--short and somewhat obvious. Ask "why". Follow up the discussion as it develops. Fill in gaps as necessary. If exploring possibilities, throw in follow-up questions, one after the other.
4. Clear up as you go. There will be divergent ideas and difference of opinion--expect it. "Clear the decks" as much as possible as the conference proceeds. See that each person gets a chance to express his ideas. Pull together the threads of thinking into some kind of a pattern that all may see it.
5. Drive on. When as much as appears to be possible has been extracted from a question or point of discussion, move to the next one. A show of hands will indicate how each person feels concerning a point and helps to close up discussion on a particular matter. Throw out another question and proceed. Respect and draw attention to minority opinions.

#### D. Serving as a Conference Leader

No one asks for permission to speak in a conference, but the leader should see to it that only one person has the floor at a time. Members talk directly to one another informally. Leader participates at will and as necessary (but not too much) and has the right to interrupt at any time.

A conference leader needs to be alert, but indirect in his approaches. He should concentrate on doing his job well rather than fearing loss of control as a leader.

Explain simple rules of conference order at the outset with a new group. These may well be:



1. The leader has nothing to "put over."
2. Everyone is expected to participate freely and voluntarily in the discussions.
3. Decisions made will reflect consensus of opinion.
4. Talk one at a time and don't engage in private conversation on the side.
5. Be brief and informal.
6. Try to disagree agreeably.

In most instances it can be assumed that both leader and group members are equally interested in discussing and solving problems of common concern but there are always some difficulties to overcome; among these are:

1. Teaching groups to confer. Groups sometimes have to be taught how to participate and contribute. This calls for time and patience on the part of the leader.
2. Keeping the "center of gravity" in the group--rather than in the leader. This means keeping the group talking together instead of the leader staying in the middle of things all the time.
3. Giving directional emphasis. Relax as a leader. Have faith in the eventual outcome. Avoid hurrying and "needling" members of the group. Direct, but don't dominate. Make questions timely and intelligent. Let things move along naturally. Step in quietly but firmly when things go wrong.
4. Using the right follow-up questions. Fit them in. Remember to ask "Why." Slip your questions in smoothly. The big difference between a good and poor conference leader is in the timing of questions.
5. Using the pick-up effectively. Refer back to earlier responses. "Hook on" to them. Build up the important points which may have been passed over too lightly before. Give credit where due. Focus attention. The pick up rightly used will keep a conference from "boggling down."

Any

Any good conference has plenty of action but that action is subject to control. In this way the conference is like a good boxing match, as compared to a "free-for-all" fight.

Some qualities of a good conference leader are:

1. Good listener..
2. Ability to generate interest and inspire confidence.
3. Friendliness and good fellowship.
4. Fairmindedness and openmindedness.

5. Self-confidence and courage.
6. Ability to "point up" discussion.
7. Sense of humor.
8. Resourcefulness and tact.
9. Ability to think quickly.
10. Coolheadedness.
11. Pleasing personality and good appearance.

The most successful leaders of conference groups are not necessarily experts in the subject, or on the particular points involved in the discussion. But such leaders can develop the greatest amount of thoughtful, constructive discussion from a group of men, among whom there may be experts. Whether the problem is one of supervision, safety or job operation, the real leader must be able to "pull out" the facts.

Some hints for the conference leader are:

1. Don't set yourself up as an expert.
2. Be conscious of the "reservoirs" of thought and experience upon which you can draw.
3. Steer the discussion away from dead-end channels and toward possible solutions.
4. Remember many improved practices grow out of conference discussions.
5. Don't make excuses if things go wrong.
6. Take full responsibility for what happens.



# REPORT ON GROUP A WORKSHOP

## JOB INSTRUCTOR TRAINING

Lawrence Borosage and George Brandon, Leaders

Certain advantages are apparent in planning short, intensive instructor-training workshops in connection with national conferences since participants have an opportunity through discussion to exchange ideas and to get practical assistance on instructional methods and procedures. Such was the case with the 15-hour instructor-training course, embodying 10 units, held as a part of this conference.

The first unit acquainted the group with the value of self-improvement along with the importance of building good teaching methods on a foundation of trade experience, skills and knowledge. The second unit, by means of demonstration performed by the leader, emphasized the ineffectiveness of "telling" and "showing" alone as methods of teaching skills and technology. In addition, "How to Plan a Lesson" was discussed and "Four-step Teaching."

Each succeeding unit was divided into two parts. The first portion of each unit was devoted to a practice demonstration lesson of how to teach a lesson, a job and/or operation, organized and presented by a member of the group. Following the demonstration, the members made an evaluation of the presentation and constructively criticized each member's presentation. The second portion of each unit was utilized by the leader in presenting new aspects of the instructional process.

No claim is made for meeting all the needs of a new instructor; however, sufficient avenues were opened to provide direction for additional work and study for the purpose of improving instruction. Brief notes on the class discussions follow.

### A. Question—Why teacher training:

1. Teaching is best way of getting information over.
2. Instruction can always be improved.
3. Skilled craftsmen have to be taught in a short intensive and condensed way.
4. Instruction must be kept at the learner's level which calls for training on, and experience in, how to teach.

### B. What methods do we use in teaching:

- |                  |                   |
|------------------|-------------------|
| 1. Demonstration | (The 1-7-70       |
| 2. Lecture       | method            |
| 3. Conference    | 1% hearing        |
| 4. Showing       | 7% visual aids    |
| 5. Actual work   | 70% actual work.) |

C. Why is "telling" alone likely to fail as a teaching device?

1. Human mind cannot comprehend the finished product?
2. Lack of learner interest.
3. No visual example to tie the words together.

In telling, stay on neutral ground and build up on a basis familiar with the one being taught. Telling alone can be good if used properly, especially on a new job.

"If the learner has not learned, the instructor has not taught." However, some men are not capable of learning no matter who teaches them.

D. How can "showing" be a failure as a teaching device?

1. Too quickly done.
2. No organization.
3. Insufficient time allotted.  
(Demonstration of making sign writer's cup, by instructor, combined elements of telling and showing.)

E. What important things does the instructor need to know?

1. How to plan, prepare and present a lesson.
2. How to use correct teaching methods and procedures.
3. How to size up learners, recognize personal qualities and individual differences.
4. How to question learners effectively.
5. How to provide for individual needs.
6. How to teach both individuals and groups.
7. How to use the blackboard, instruction sheets, and other teaching aids.
8. How to accept the responsibilities of the instructor as a manager.
9. How to check the effectiveness of teaching.

F. How to get ready to instruct?

1. Have a time table. Determine what you want the learner to have and do; when and how long.
2. Break down the lesson on a plan sheet:
  - a. List steps.
  - b. Pick out key points.
3. Have everything ready. Have the right "tools," equipment and materials at or near your work place.
4. Have desk or work place properly arranged and neat.

G. How to instruct?

1. Prepare the learner (or group)
  - a. Put him at ease.
  - b. Find out what he already knows about the lesson at hand.



- c. Get him interested in learning the lesson.
- d. Place learner in correct position to receive your instruction.
2. Present the lesson (following the "Lesson breakdown and plan sheet")
  - a. Tell, show, illustrate, and question carefully and patiently.
  - b. Stress key points.
  - c. Instruct clearly and completely, taking up one point at a time—but no more than he can master.
3. Application or tryout
  - a. Test learner by having learner present the lesson.
  - b. Have learner tell and show you.
  - c. Have learner explain key points of the lesson.
  - d. Ask questions and correct errors.
  - e. Continue until you know he knows.
4. Checking, testing, and follow-up.
  - a. Put him on his own.
  - b. Check frequently.
  - c. Designate to whom he goes for help.
  - d. Encourage questions.
  - e. Get him to look for key points as he progresses.
  - f. Taper off with extra coaching and close follow-up.

In the comments which followed, those present brought out the fact that they could only spend 1 day a month at a coop instructing men, that it took time to become well-acquainted with each man individually, and that much work had to be done to assist the foreman as an instructor. Harmonious relationships with the foreman are essential.

- H. How to prepare the learner to lift a 100-pound coil of wire on to a coop truck?
1. Explain to the individual why he should lift the coil in the correct way. (Prevent rupture, not get hurt, etc.)
  2. Does he know why he is doing the job?
  3. Ask him if he knows how to do the job. Demonstrate.
  4. In lifting, check size of object to be lifted with weight of the lifter.

(Demonstrations were made by individual members of the group with comments from the group on their application of teaching techniques. Each demonstration was graded as to how effectively each of the elements was presented and handled by the instructor when performing the practice demonstration, and as to how well he followed his "lesson breakdown and plan sheet." Jobs demonstrated included: How to make a hot tie; how to form a tie stick loop in a hot tie; how to install a hot tie on an insulator.)

## Summary Comments

An instructor should be:

1. Friendly.
2. Sincere.
3. Fluent.
4. Well versed in his subject.
5. Courteous.
6. Cooperative.

Questions asked of the learners should be:

1. Informative.
2. Suggestive.
3. Comparative.
4. Thought provoking.

Some advantages of group instruction:

1. Interest getting.
2. Fast method of teaching—saves time.
3. Gives more than one point of view.
4. Requires better instruction.

Teaching aids include:

1. Film strips.
2. Movie films.
3. Slides.
4. Blackboard.
5. Charts.
6. Graphs.
7. Diagrams and pictures.

(The advisability of using actual pictures of accidents as a method of cautioning men to use safe methods was discussed. The consensus of opinion was that such pictures might do more harm than good.)

Seating and positioning men for instruction:

1. Try to have the meeting place adequate.
2. Need right atmosphere.
3. Position to suit occasion.

Good housekeeping:

1. Goes hand in hand with good organization.
2. Can't teach properly in a cluttered up, dirty place.



Heating, light and ventilation:

1. Cut meeting short in hot and cold weather.
2. Get fan from manager in heat of summer.
3. Try not to use buildings in winter without any heat.
4. Obligated to get best place in community.
5. Have manager at meeting.

Record keeping at class sessions:

1. Ways of knowing men by name.
2. Have foreman check attendance and point out men you don't know.
3. Sign own name.
4. Use roll call.

Size up effectiveness of instruction:

1. By questioning.
2. By observation.
3. From records.

REA'S INTEREST AND PARTICIPATION  
IN JOB TRAINING AND SAFETY PROGRAMS

by

Ralph A. C. Hill  
Labor Relations and Safety Specialist  
Rural Electrification Administration

In about an hour and 15 minutes this conference will be over, and at least another year will pass before we will have the opportunity to meet like this again. However, as a result of this conference I am confident that the coming year will be a fruitful one as far as our job training and safety program is concerned.

Needless to say, there is a big task ahead for all of you instructors. Developing the comprehensive program that is needed by our borrowers is not a hit-or-miss proposition. It needs to be worked at constantly, and under no condition should it be neglected or sidetracked.

I think it has been clearly brought out at this conference exactly the type of program needed by our borrowers. We in REA are interested in seeing that program developed to such a high degree that when the cooperatives are no longer connected with REA as borrowers they will be able to carry on the work themselves, through their foremen and supervisors, in a manner fashioned after the pattern you instructors bring to them now.

As it has been brought out time and again during this conference, the secret of the success of any job training and safety program is personal supervision by the instructor. There is no substitute for it.

The only way employees and employer alike can gain the full benefit of your knowledge as job training instructors is to have you there, in person, imparting it.

I think we all recognize that job training and job safety are synonymous. If the worker is properly trained, the safety benefits will follow. As Mr. Wickard pointed out in his talk before us last Monday, there is no safer worker than a man who knows his job well, while on the other hand, an employee who is confused or uncertain about his work becomes a walking safety hazard.

Along that same line of thought, a well trained worker is generally a happy one. It follows, then, that a good job training program, with all the safety benefits which come from it, will help toward better employee-employer relations, and no business can be a complete success unless the worker and his boss get along with each other.



Keep in mind that there are no short cuts to developing a successful job training program. The pattern set up at this conference must be followed if we are to obtain the results our borrowers expect from such a program.

On the whole, I think that this conference has done all of us a great deal of good. Further, it has made very evident the fact that meetings such as this are not solely for the benefit of the instructors. On the contrary, everyone who attended--borrowers, REA officials, T&I men and representatives of the U.S. Office of Education--all gained much by being here.

More has been accomplished, and better understandings have been reached by all concerned, than at any other conference of this type in the past.

We have come out of these sessions with new and better ideas. As a result of this conference, all of us now have a clear picture of the type of program our borrowers need and, most important of all, we have developed some good, sound plans for the best way to carry out that program.

Of course, all of these accomplishments did not come about just because we all happened to be sitting in the same rooms for the past five days. It took cooperation, and lots of it, from everyone concerned, to make this conference the successful and beneficial one it has been.

I sincerely hope that the spirit of cooperation which has prevailed throughout this meeting will continue during the months of hard work ahead. It will make much easier the all-important job of giving our borrowers the type of job training and safety program they need.

In closing, I would like to thank all of you for your part in making this conference such a success. I sincerely hope that we can all meet again next year to discuss our problems and compare notes in the same beneficial manner.

Meanwhile, I would like every one of you to remember that we in REA will always be available to assist and work with you in every way possible to assure the future success of this program.

A REPORT ON  
CONFERENCE OF TRADE AND INDUSTRIAL EDUCATIONAL PERSONNEL

held in connection with  
1949 Rural Electrification Job Training and Safety Conference

Washington, D. C.--October 18, 1949

The meeting was opened at 1:00 p.m. by W. H. Cooper, Chief Trade and Industrial Education Service, Division of Vocational Education, U. S. Office of Education, who served as chairman.

Those present were: Ben E. Harris, Alabama; J. C. Ruppert, Arkansas; Earl Baird, Iowa; L. L. Wingo, Illinois; H. O. Carlton, Georgia; E. A. Lee, Louisiana; Merton Wheeler, Missouri; C. F. Swearingen, Missouri; J. Wood, Minnesota; Lewis Brown, Minnesota; E. A. Parker, Mississippi; Henry A. Gonzales, New Mexico; L. Borosage, Ohio; Sam Allen, Ohio; N. S. Berkey, Ohio; J. F. Reeley, Ohio; Everett S. Hox, Ohio; M. L. Powers, Oklahoma; N. Schaeck, Oklahoma; J. E. TePoorten, Wisconsin; Ed Klein, Wisconsin, Ralph A. C. Hill, Washington, D. C.; A. B. Shehee, Washington, D. C.; W. A. Ross, Washington, D. C.

Mr. Cooper called upon Mr. Ross to explain the plan of the meeting. Mr. Ross stated briefly that in the seven years the national Job Training and Safety Conference had been running, the picture had changed somewhat with respect to certain needs for training, and that problems were continually arising with respect to training in which both the R.E.A. and vocational education had an interest--as well as a responsibility. He stated further that this was in no way to be a "gripe" session, but that opportunity was merely being afforded to set forth specific training problems of importance, and to get reactions thereon. Mr. Ross also stated that the results of this session might be of considerable assistance in formulating guiding principles and policies for the future. It was made clear that this was an honest attempt to get at the facts and try to find solutions.

Mr. Cooper stated that for a starting point we had two lists of problems to be used as a basis for discussion--one to be presented by Mr. Hill and the other to be presented by Mr. Wheeler constituting a compilation on the basis of a questionnaire prepared under the direction of Walter Brown of Missouri. The two lists follow.

Problems in R.E.A. Training  
(as presented by Ralph Hill)

- I. Getting a better understanding of the job training for safety program as it now stands
  - A. What should it include?
  - B. What are the objectives for job training?
  - C. Who is responsible for the job training for safety program?
  - D. How close are we coming to the objective? What's wrong with training now?



- II. Ways of making the program more flexible in order to meet needs of the four groups of workers indicated above.
- A. More effective use of advisory committees.
  - B. Use established apprentice program.
  - C. Use more of conference methods in teaching.
  - D. Better use of pre-induction foreman training.
  - E. More effective use of instructional material now available. Greater exchange between States.
  - F. Special short unit courses--perhaps 3 or 4 days.
- III. What are the objectives of job training?
- A. To develop efficient and safe workers.
- IV. Who is responsible for the State Job Training for Safety Program?
- A. Vocational T. & I. Education with the advice and counsel of the State REA Advisory Committees.
- V. How close are we coming to the objective? What is wrong with Job Training now?
- A. Tendency to neglect original groups for whom training was designed.
  - B. Tendency to overlook certain classes of workers (example: laborers).
  - C. Tendency to over-emphasize either on-the-job or classroom instruction.
  - D. Not enough advance planning on the part of job trainers as to what they teach, when and how. Poorly planned itineraries.
  - E. Not close enough working relationships between State and REA Advisory Committees and State supervisors of trade and industrial education.
  - F. Lack of close enough supervision and follow-up of the program on the part of State REA Committees and T. & I.
  - G. Inadequate teacher training.
  - H. Lack of understanding and responsibilities on the part of State REA Committees and State T. & I. offices.
  - I. Lack of understanding by the individuals concerned at the national level.
  - J. Lack of understanding among employees as to the value of, and need for, the training program.
- VI. What should be the nature of the overall REA Training Program--needs.
- A. Better public relations.
  - B. Managerial training.
- VII. Improving half-hearted support of local managers.
- A. Instructor exhaust every resource to improve relationships.

Problems in R.E.A. Training  
(as presented by Merton Wheeler)

1. What are some ways and means of making the REA Job Training for Safety Program sufficiently flexible to meet the needs of the various grades of workers served (foremen, linemen, apprentices, groundmen, etc.)?
2. Why should Vocational Education continue its activity in and expend funds for the REA Job Training for Safety Program?
3. What are some things that might be done to reduce the high compensation insurance rates for instructors?
4. What should be the nature of an over-all training program for REA personnel?
5. What are some methods of building and maintaining good public relations for State Safety for Job Training Programs?
6. What are possible sources of qualified instructors for the REA Job Training for Safety Program? What qualifications should be required? What type of training program should be provided for these instructors?
7. What responsibility, if any, should REA instructors take insofar as inspection is concerned?
8. What are some methods of improving the situation when there is only half-hearted support on the part of the local manager?
9. What are the characteristics of a satisfactory working arrangement with the State REA organization?
10. What are some of the problems concerning itinerary planning for instructors and how may they be met?
11. What instructional material should be available for safety meetings? How may they be developed?
12. What are the practices in financing adult programs in Trade and Industrial Education in the various States?

A consolidation of the two lists was made, and the following results of the discussion were gleaned from the blackboard listing.

- I. Getting a better understanding of the Job Training for Safety Program
  - A. What should the program include
    1. Laborers.
    2. Groundmen.
    3. Linemen.
    4. Foreman as a worker.



- B. State office exhaust every resource to improve relationships.
- C. State RFA Committees exhaust every resource to improve relationships.
- D. Provide satisfactory reporting systems to keep those concerned and responsible informed.
- E. Managerial training.

1. Alexander, C. G. - Tennessee
2. Allen, S. - Ohio
3. Andersen, F. - Tennessee
4. Anderson, N. - Washington, D.C. (REA)
5. Aubrey, R. - Tennessee
6. Baird, E. S. - Iowa
7. Barg, H. B. - Wisconsin
8. Barnard, J. - Washington, D.C. (REA)
9. Barnett, S. C. - Washington, D.C. (REA)
10. Beck, Glenn, S. - South Dakota
11. Becker, A. E. - Illinois
12. Beckham, W. P. - South Carolina
13. Berkey, M. S. - Ohio
14. Bidle, D. B. - Illinois
15. Black, W. W. - Florida
16. Blacklock, A. B. - Missouri
17. Bledsoe, J. L. - Alabama
18. Boggs, I. K. - Missouri
19. Borders, A. C. - Georgia
20. Borosage, L. - Ohio
21. Bowsmen, F. M. - Michigan
22. Brandon, G. L. - Ohio
23. Bridges, Q. L. - Texas
24. Brown, L. - Minnesota
25. Brown, W. C. - Missouri
26. Bullock, J. F. - Georgia
27. Burke, H. - Wisconsin
28. Burks, G. - Tennessee
29. Caldwell, R. C. - South Carolina
30. Carlton, H. O. - Georgia
31. Chambers, J. W. - Louisiana
32. Christianson, E. M. - Minnesota
33. Cluck, C. A. - Pennsylvania
34. Cooper, W. H. - Washington, D.C.
35. Couch, J. H. - Tennessee
36. DeLong, E. E. - Illinois
37. DeVaughan - North Carolina
38. Dew, Russell - New Mexico
39. Doyle, J. J. - Washington, D.C. (REA)
40. Dunigan, W. C. - North Carolina
41. Edwards, E. C. - Alabama
42. Ehlers, F. F. - Wisconsin
43. Emerson, C. - Washington, D.C. (REA)
44. Ettleman, Walt - Washington, D.C. (REA)



45. Findlay, T. A. - Minnesota
46. Gerking, George - Iowa
47. Glaze, D. H. - Missouri
48. Gonzales, H. A. - New Mexico
49. Gregory, R. W. - Washington, D.C.
50. Groat, L. C. - Illinois
51. Gruetzmacher, H. A. - Iowa
52. Guning, E. - Wisconsin
53. Haggard, George - Washington, D.C. (REA)
54. Harris, B. E. - Alabama
55. Heath, O. L. - Virginia
56. Hendricks, A. - Tennessee
57. High, C. A. - Ohio
58. Hill, R.A.C. - Washington, D.C.
59. Hoy, E.S. - Ohio
60. Hutchinson, Knox T. - Washington, D.C. (REA)
61. Jacobus, D. - Maryland
62. James, H. L. - Maryland
63. Kaderli, M. D. - Texas
64. Kappahan, Harvey - Michigan
65. Kellogg, E. H. - Indiana
66. Keohan, F. - Washington, D. C.
67. Kerlick, E. W. - Texas
68. Klein, F. - Wisconsin
70. LaMaster, Frank - Washington, D.C. (REA)
71. Langan, J. - Mississippi
72. Langston, H. L. - Georgia
73. Lee, E. A. - Louisiana
74. Lett, T. P. - Washington, D.C.
75. Long, R. C. - Pennsylvania
76. Mahaffey, J. M. - Mississippi
77. Maitland, S. - Washington, D.C.
78. McAdam, J. E. - Louisiana
79. McBride, B. M. - Alabama
80. McDonald, George - Illinois
81. McKillop, I. T. - Washington, D.C. (REA)
82. McQuitty, R. - Missouri
83. McWhorter, Clark - Washington, D.C.
84. Meyers, Larry - Wisconsin
85. Miller, C. J. - Washington, D.C.
86. Mills, W. W. - Texas
87. Moore, Avery - Washington, D.C.
88. Moore, R. J. - Washington, D.C.
89. Mowers, G. H. - North Dakota



90. Nauert, E. F. - Texas
91. Neely, Henry - Pennsylvania
92. O'Brien, Joseph, Washington, D.C. (REA)
93. Parker, E. A. - Mississippi
94. Parrish, O. C. - Tennessee
95. Poeppel, M. F. - Ohio
96. Potthast, H. C. - Wisconsin
97. Powers, M. L. - Oklahoma
98. Record, E. - Missouri
99. Reeley, J. - Ohio
100. Reid, E. A. - Montana
101. Ross, W. A. - Washington, D.C.
102. Ruppert, G. R. - Louisiana
103. Ruppert, J. C. - Arkansas
104. Saunders, E. - Washington, D.C. (REA)
105. Schoech, N. - Oklahoma
106. Schroeml, A. F. - Minnesota
107. Shehee, A. B. - Washington, D. C. (REA)
108. Slaughter, J. B. - Georgia
109. Smith, D. W. - Pennsylvania
110. Sorenson, J. L. - Iowa
111. Spencer, G. - Michigan
112. Staff, J. C. - Kansas
113. Stovall, E. H. - Mississippi
114. Swearingen, C. - Missouri
115. TePoorten, John - Wisconsin
116. Thompson, B. A. - Mississippi
117. Titus, E. B. - Oregon
118. Van Oot, B. H. - Virginia
119. Viverette, C. E. - North Carolina
120. Wagner, G. - Washington, D.C.
121. Watkins, B. E. - Mississippi
122. Webster, J. O. - Kentucky
123. Wheeler, M. C. - Missouri
124. Wickard, C. R. - Washington, D. C. (REA)
125. Williams, H. S. - Washington, D. C.
126. Wingo, L. L. - Illinois
127. Wood, J. - Minnesota



